

MICE-0029-US
(99.00673)

APPLICATION
FOR
UNITED STATES LETTERS PATENT

TITLE: Pen-Based Split Computer Display

INVENTORS: Michael V. Leman

Express Mail No: EL360179432US

Date: May 18, 1999

Trop, Pruner, Hu & Miles, P.C.
Houston, Texas 77024
(Voice) 713-468-8880 (Facsimile) 713-468-8883

PEN-BASED SPLIT COMPUTER DISPLAY

Background

The invention relates generally to computer displays and, more
5 particularly, to pen-based laptop computer displays.

Pen devices may be used to provide input to a computer by using the pen
to touch certain areas on a computer display. Because pen devices are more
portable than other input devices such as mice and trackballs, the focus of pen-
based computing has been on personal digital assistants and other portable
10 computing devices. However, pen-based computers provide not only the
convenience of interacting with a pen device, but may also provide capabilities
that many personal computer users desire such as handwriting recognition and
digitizing technology. As pen devices become an integral part of computing, a
need will arise for the integration of both standard computer displays and pen-
based displays in a single computer system. Conventional laptop computers,
15 however, do not generally provide for pen-based and traditional computer
displays to be used concurrently. Thus, it would be beneficial to simultaneously
provide both conventional display and pen-based display capabilities in a laptop
computer system.

Summary

In one embodiment, the invention includes a computer system having a
first display coupled to a base unit. A second display may be coupled to the first
display. One of the displays may accept input from a pen-type input device, and
25 the computer system may be adapted to use the first and second displays
concurrently. In another embodiment, the invention includes a display module
having a first display coupled to a second display. One of the displays may be
adapted to accept input from a pen-type device. Additionally, the display module
may be configured to use the first and second displays concurrently.

Brief Description of the Drawings

Figure 1 shows a laptop computer system having a split display in accordance with one embodiment of the invention.

Figure 2 shows the folding of a second display in accordance with one 5 embodiment of the invention.

Figure 3 shows the folding of a first display in accordance with one embodiment of the invention.

Detailed Description

10 Referring to FIG. 1, an illustrative laptop computer system 100 in accordance with one embodiment of the invention may include a base unit 102 having a microprocessor, system memory, input and output controls, and a hard disk drive. A keyboard 104 may be located on the top of the base unit 102 to provide one source of input to the laptop computer system 100. The laptop computer system 100 may have a two-component display including a first display 106 and a second display 110. The first display 106 may be hinged to the base unit 102 by a hinge 108. The second display 110 may be hinged to either side of the first display 106 by a hinge 112. In another embodiment, the second display 110 may be hinged to the top of the first display 106. The first display 106 may 15 be a liquid crystal display and provide conventional computer output such as raster images. For example, the first display 106 may be either an active or passive matrix display. The second display 110 may accept input from a pen device providing a pen-based computing environment. The pen-based display 110 may utilize any conventional pen device such as a light pen. The hinge 112 20 may be any standard type of hinge including a scissor hinge or friction hinge. Electrical conductors may be located within the hinge 112 to facilitate the transfer of input and output signals between the second display 110 and the base unit 102. Additionally, the electrical conductors within the hinge 112 may 25 provide power to the second display 110.

A computer system in accordance with the invention may be operated in different modes depending upon the needs of a user. First, the laptop computer system 100 may be configured such that the first display 106 functions as a conventional display while the second display 110 functions as a pen-based display. In this configuration as illustrated in FIG. 1, the pen-based and conventional displays may be used concurrently. A user may provide input to the system 100 on the pen-based display 110 with a pen-type device while viewing conventional raster images on the first display 106. In another configuration of the laptop computer system 100, both components of the split display may be 5 configured to form a single conventional output display that is much larger than standard laptop displays.

10

Additional configurations of the laptop computer system 100 may be available by folding the displays around their hinges. In one configuration, the first display 106 may function as a conventional computer display while the second display 110 may be folded back around its hinge 112 as shown by arrow 114. Referring to FIG. 2, for example, the second display 110 may be folded around completely such that the second display 110 rests against the back of the first display 106. This configuration allows a user to interact with the laptop computer system 100 as a conventional laptop with a standard output display. 15 Referring to FIG. 3, yet another configuration of the laptop computer system 100 may be available by folding the first display 106 down around its hinge 108 as shown by arrow 116. The first display 106 may be folded down to rest on the surface of the keyboard 104, thereby forming a tablet with the second display 110. In this position, the second display 110 may be exposed and accept input 20 from a pen-type device. A user may operate the laptop computer system 100 as a pen-based tablet.

25

30 By allowing various positions and configurations of the laptop computer system 100, the user gains several benefits over conventional laptop computers and pen-based tablets. One advantage of the invention is that the user is simultaneously provided with both conventional display capabilities and pen-

based input capabilities from a split display as illustrated in FIG. 1. Moreover, the hinge mechanism between the first and second displays allows the use of both displays without adding components or detaching components from the laptop computer system 100. Another advantage of the invention is that the split display enables the use of displays that are much larger than those used in conventional pen-based tablets. Also, the use of hinges 108 and 112 allows a laptop in accordance with the invention to be folded into a compact configuration that is both convenient and portable.

5 While the invention has been disclosed with respect to a limited number of 10 embodiments, numerous modifications and variations will be appreciated by those skilled in the art. It is intended, therefore, that the following claims cover all such modifications and variations that may fall within the true spirit and scope of the invention.

SEARCHED
INDEXED
MAILED
FILED
APR 20 1999
U.S. PATENT AND TRADEMARK OFFICE
1000 LEAVITT RD.
SUITE 100
ANN ARBOR, MI 48106-2297
TELEPHONE (313) 529-1000
TELEX 237-2222
FAX (313) 529-1010